Phoenix™ Knee CPM
Repair Manual

McKelor™ Technologies, LTD

If you are like most business people, you understand that when your equipment is down, for whatever reason, it costs you money.

- Shipping
- Replacement Equipment
- Biomedical technician cost
- Time

This manual is designed to save you money. Components discussed here are the most common parts and assemblies to fail on a CPM device. None of these parts require specialized tools or training to replace. Because most repairs require only 20 to 30 minutes to perform, downtime is virtually eliminated.

If you have questions concerning any of these repairs, please call for technical support at (800) 273-5233.

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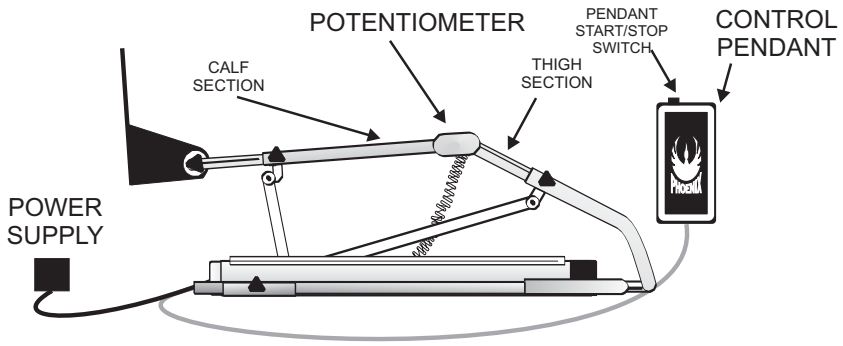
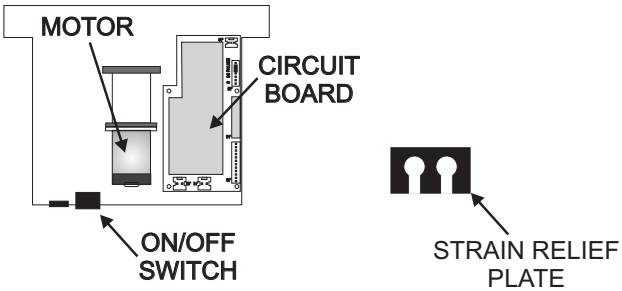




Quick Switch Parts

Power Supply .....Part No. 1901

ON/OFF Switch.....Part No. 1507

Pendant Assembly.....Part No. 1214

Knee Pot Assembly.....Part No. 1902

Circuit Board.....Part No. 1130

Motor.....Part No. 1903

Track Seals.....Part No. 1904

Pendant START/STOP Switch.....Part No. 1905

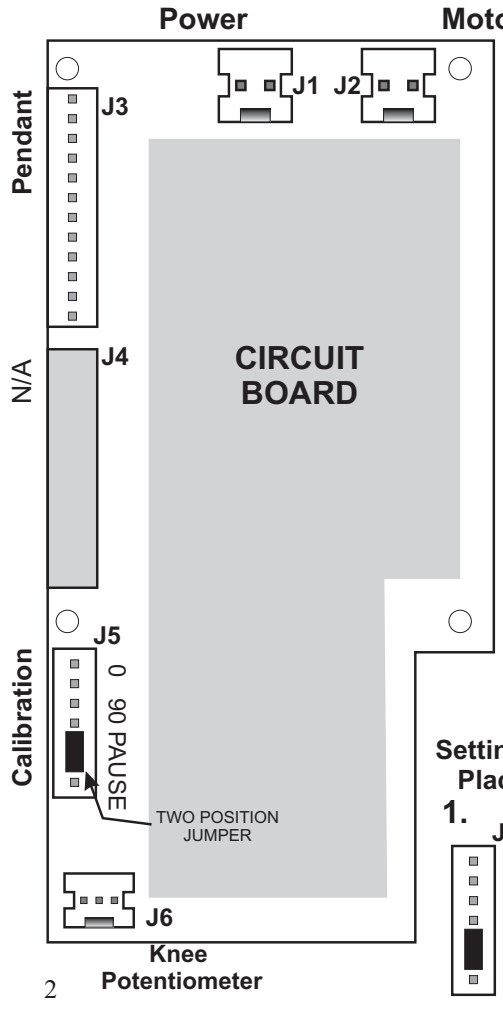
Calibration & Pause Procedure

Use this procedure when:

- Replacing the Circuit Board
- Replacing the Knee Potentiometer Assembly

Tools required:

2 Position Jumper (Provided)

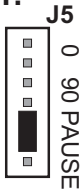


The Calibration Procedure is the same for Circuit Board or Potentiometer replacement

1. Turn the machine OFF.
2. Remove the two position jumper from J5.
3. Place the jumper on the zero (0) position.
4. Turn the machine ON.
5. Listen for 2 beeps.
6. Using the START/STOP button on the Pendant, move the unit to ZERO.
7. Remove the jumper.
8. Place the jumper at the 90 position.
9. Listen for 3 beeps.
10. Using the START/STOP button on the Pendant, move the unit to 90 DEGREES.
11. Remove the jumper.
12. The machine is calibrated.

Setting the PAUSE feature
Place the jumper as shown

1.



PAUSE in EXT only

2.

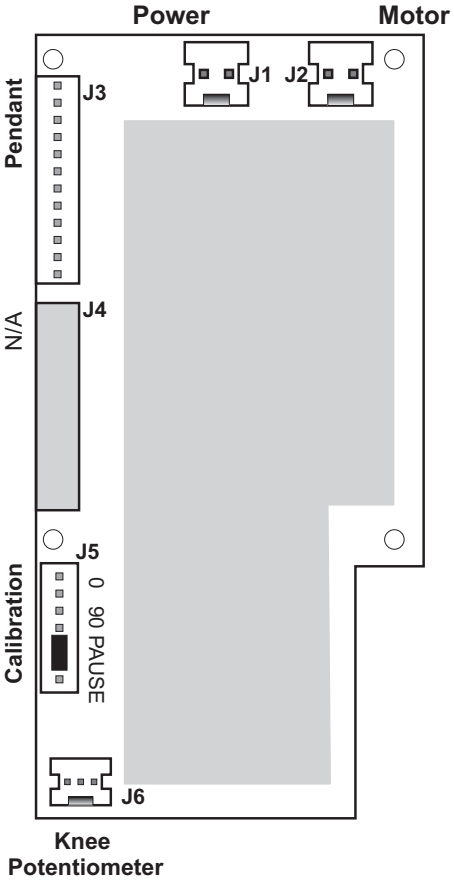
PAUSE in EXT & FLEX

Replacing the Circuit Board

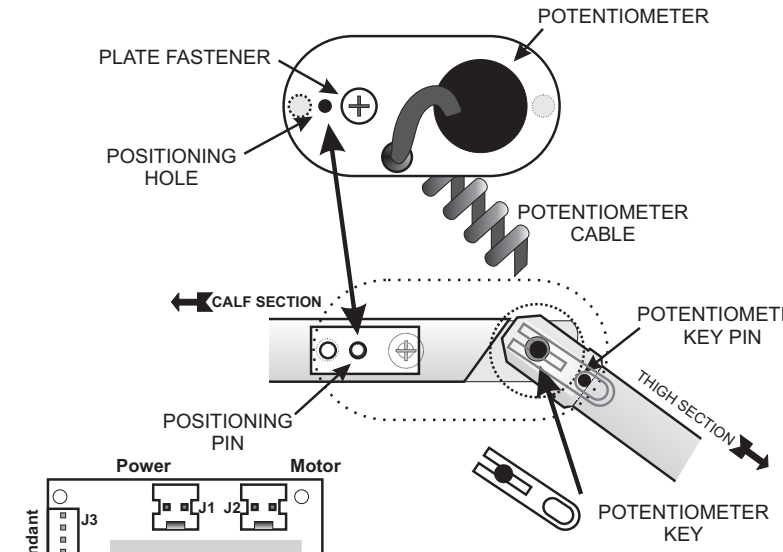
Tools Required:

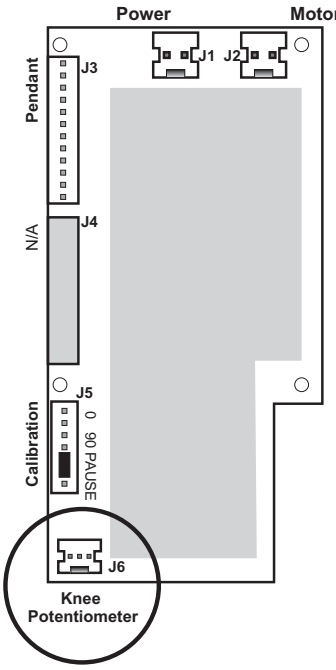
Phillips Head Screwdriver; small *nonmagnetic* Phillips Head Screwdriver

1. Turn the power OFF.
2. Remove the top cover of the Control Box. (5 Phillips Head Screws)
3. Unplug the motor, power, pendant and knee potentiometer connectors.
4. Using the NON-MAGNETIC screwdriver, remove the 4 screws holding the Circuit Board in place.
5. Replace with the new board and secure with the 4 screws.
6. Plug in the motor, power, pendant and potentiometer connectors.
7. Follow the CALIBRATION PROCEDURE. (Page 2)
8. Replace the top cover.



Replacing the Knee Potentiometer Assembly





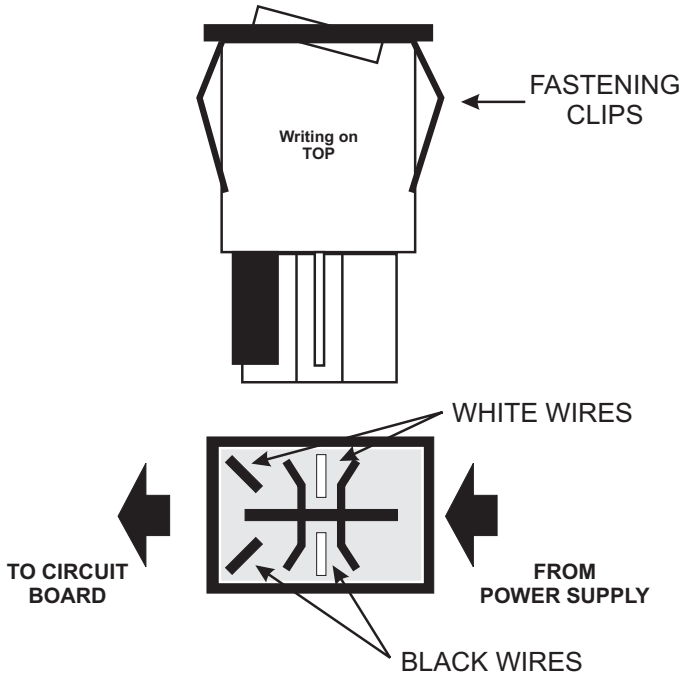
Tools Required:

Phillips Screwdriver, 3/4 inch open-end wrench

1. Turn the Power Switch OFF.
2. Remove the Control Box Cover. (5 Phillips Screws)
3. Unplug the Potentiometer Cable from J6 on the Circuit Board.
4. Loosen the Strain-relief from the Potentiometer (POT) and Pendant Cables.
5. Remove the Strain-relief Plate.
6. Remove the Potentiometer Cover (2 Screws)
6. Unscrew the POT Plate fastener.
7. Remove the POT Plate.
8. Press the new POT Assembly Plate onto the Positioning Pin of the calf section. *Be careful to align the KEY with the KEY PIN on the Thigh Section.*
9. Secure the POT plate with the fastener.
10. Replace the POT and Pendant Cables. Secure the Strain-relief Plate.
11. Plug the POT Cable into J6 on the Circuit Board.

12. Calibrate the Machine by following the Calibration instructions.(Page 2)

Replacing the ON/OFF Switch

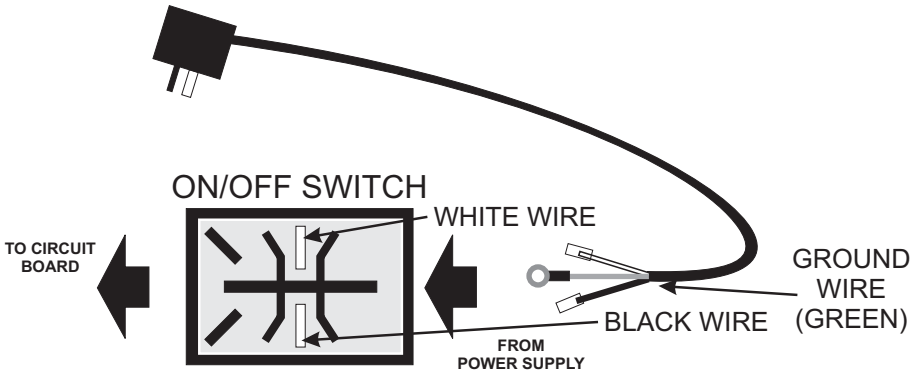


Tools Required:
Pliers

Caution: To avoid electric shock unplug the unit before beginning this procedure.

1. Turn the Power Switch OFF and unplug unit from wall outlet.
2. Remove the Control Box Cover. (5 Phillips Screws)
3. Unplug the the 2 white and 2 black wires from the back of the ON/OFF switch.
4. Use the pliers to squeeze the fastening clips and push the switch out.
5. Press the new ON/OFF switch into position.
6. Plug in the WHITE and BLACK wires as indicated above.(See illustration)
7. Replace the cover.

Replacing the Power Supply



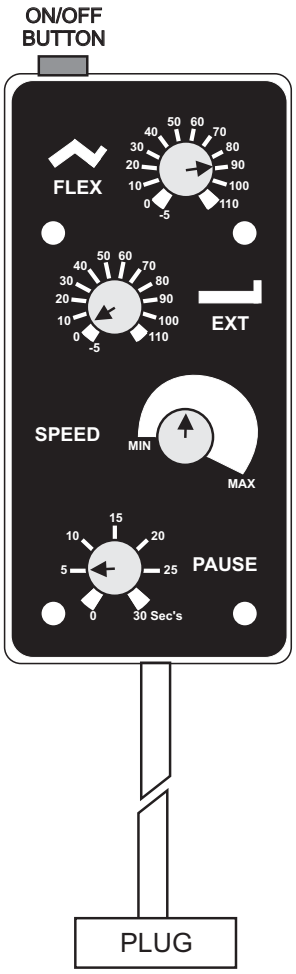
Tools Required:

Pliers, Phillips Head Screwdriver

Caution: To avoid electric shock unplug the unit before beginning this procedure.

1. Turn the Power Switch OFF and unplug the unit from wall outlet.
2. Remove the Control Box Cover. (5 Phillips Screws)
3. Unplug the white and black wires from the POWER SUPPLY side of the of the ON/OFF switch. (See illustration)
4. Disconnect the green ground wire
5. Using the pliers squeeze the sides of the strain-relief. Push the strain-relief out.
6. Remove the power supply cord.
7. Thread the new Power Supply through the opening.
8. Replace the strain relief.
9. Plug in the white and black wires as indicated above. (See illustration)
10. Attach the green ground wire.

Replacing the Pendant

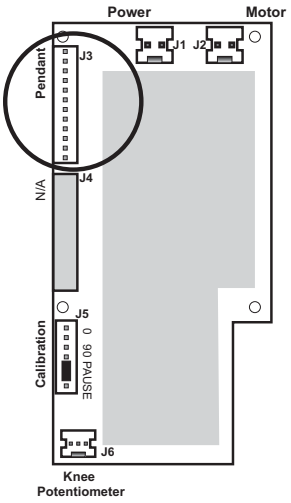


Tools required:

Phillips head screwdriver, 3/4 inch open-end wrench

1. Turn the Power Switch OFF
2. Remove the Control Box Cover. (5 Phillips screws)
3. Unplug the Pendant Cable from J3 on the Circuit Board.
4. Loosen the Strain-relief from the POT and Pendant Cables.
5. Remove the Strain-relief Plate.
6. Remove the old Pendant.
7. Plug in the new Pendant.
8. Replace the POT and Pendant Cables and secure the strain-relief plate.
9. Replace the Control Box cover.

Pendant is pre-calibrated.

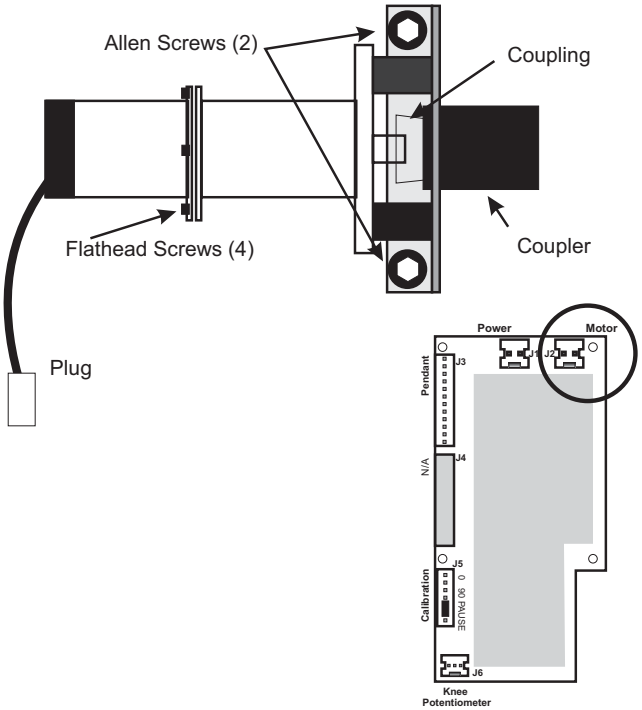


Replacing the Motor

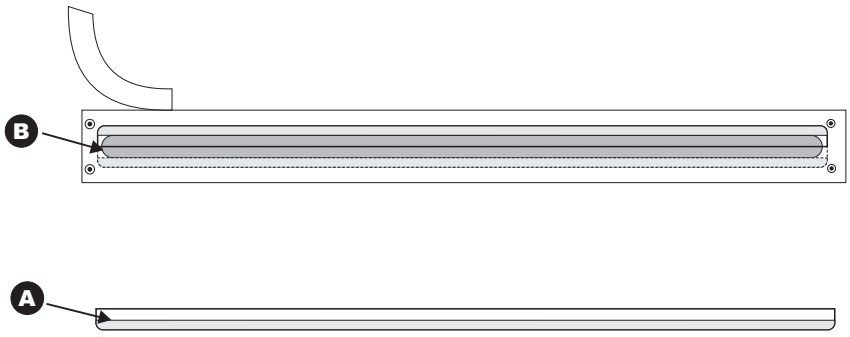
Tools required:

Phillips Head Screwdriver, Small Flat Head Screwdriver, 9/64th Allen Wrench

1. Turn the Power Switch OFF.
2. Remove the Control Box Cover. (5 Phillips Screws)
3. Unplug the Motor from the Circuit Board.
4. Remove the Motor and gearbox assembly using the Allen Wrench to unscrew the two(2) screws from the motor mounting bracket.
5. Unplug the gearbox coupling from the rubber coupler.
6. Remove the motor from the gearbox by using the flathead screwdriver to unscrew the 4 screws holding the motor.
7. Replace with the new motor and secure with 4 screws.
8. Plug the coupling into the rubber coupler.
9. Secure the motor mounting bracket with the two (2) screws.
10. Plug in the motor to the Circuit Board.
11. Replace the top cover.



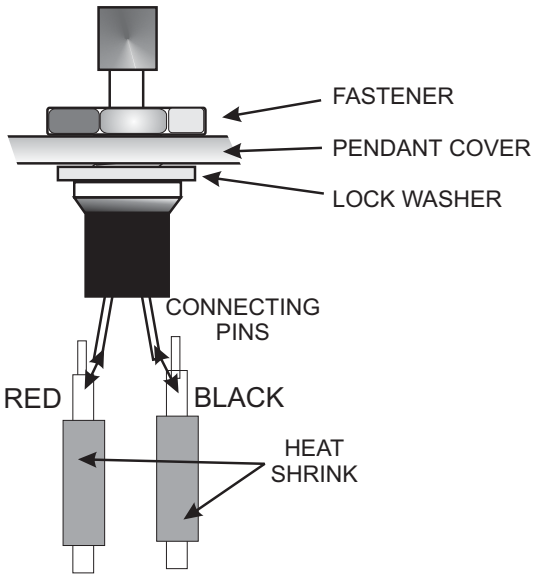
Replacing Trackseals



Attaching the Track Seals

1. Remove the old track seal.
2. Clean off any adhesive residue from the old track seal. *Surfaces must be cleaned thoroughly for the new track seal to adhere properly.* Clean with adhesive remover and then with alcohol.
3. Remove the paper strip from the adhesive on the new track seal.
4. Using the line (A) on the track seal as a guide, attach the track seal to the outside of the tube so that it runs along the track opening (B).
5. Next, apply the inside track seal using the flexible edge of the outside seal as a guide. The inside track seal should touch the edge of the outside track seal.

Replacing the Pendant START/STOP Switch



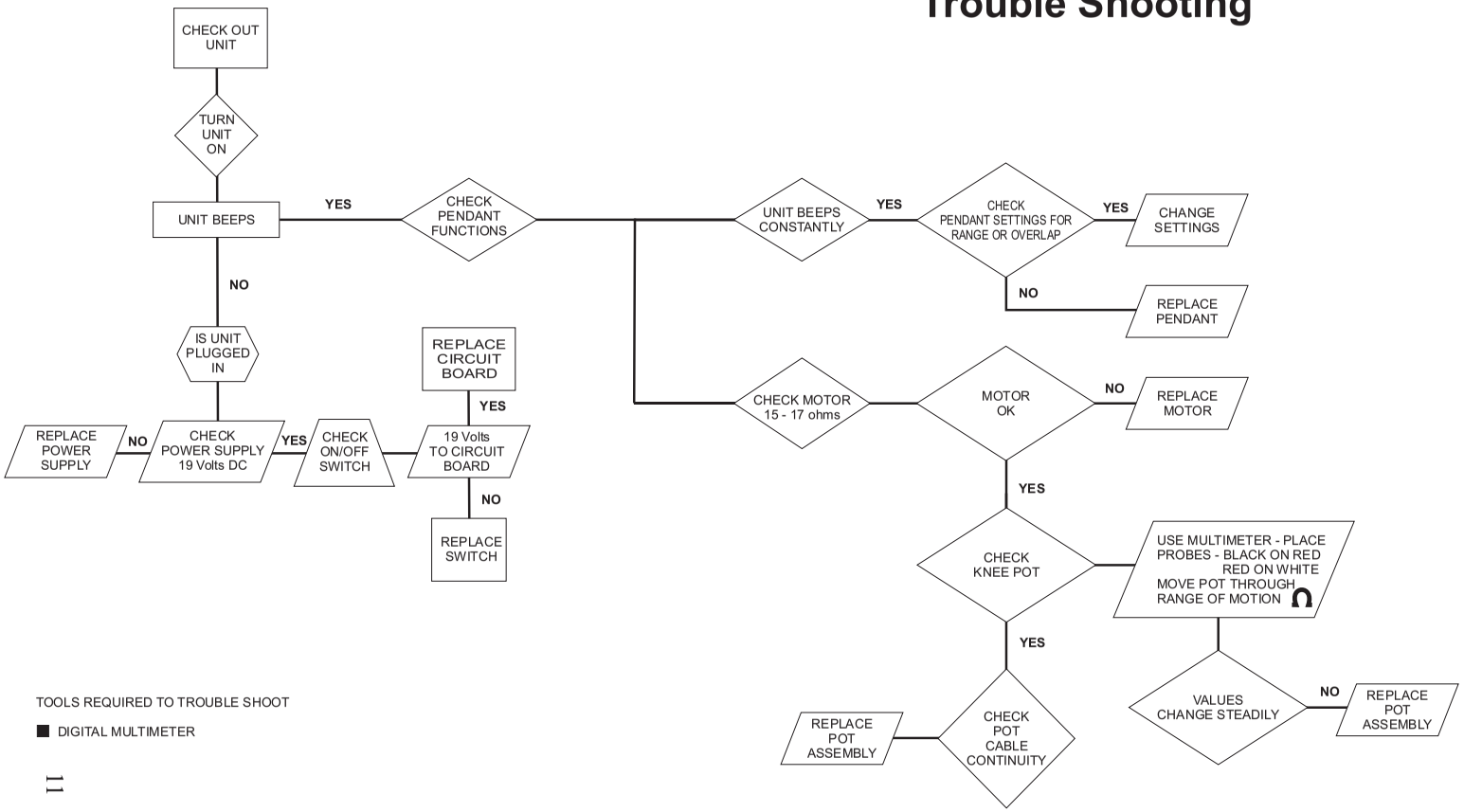
Although the other repairs that appear in this manual require no special skills or training, if you have soldering capabilities you can save by performing this simple repair.

Tools required:

Soldering Iron, Solder, wire strippers/cutters, Small Phillips screwdriver, heat gun or hair dryer

1. Remove Face Plate (4 screws)
2. Cut red and black wires at the base of the old switch.
3. Carefully remove the old heat shrink.
4. Thread the new heat shrink tubing (included in the kit) onto the red and black wires.
5. Solder the red wire to one connecting pin and the black wire to the other connecting pin.
6. Place the heat shrink over the pin connectors and shrink using the heat gun or hair dryer.
7. Replace the face plate.

Trouble Shooting



TOOLS REQUIRED TO TROUBLE SHOOT

- DIGITAL MULTIMETER

keeping **CPM** *simple...*

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